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EXAMINER

BHARADWAJ, KALPANA

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/679,606	Applicant(s) BARRETT ET AL.	
	Examiner KALPANA BHARADWAJ	Art Unit 2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 5-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-18,20,23 and 24 is/are rejected.
- 7) ☒ Claim(s) 19, 21, 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) ☐ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413) |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) ☐ Information Disclosure Statement(s) (PTO/SB/08) | 5) ☐ Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) ☐ Other: _____ |

DETAILED ACTION

1. This Office Action is in response to an AMENDMENT entered Feb 01, 2008 for the patent application 10/679606 filed on Oct 02, 2003.
2. All prior office actions are fully incorporated into this Office Action by reference.

Status of Claims

3. Claims 1-2 and 5-24 are pending. Claims 3-4 and 25-32 are canceled.

Allowable Subject Matter

4. Claims 19, 21 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-2 and 5-18 and 20, 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sturdy (USPN 2003/0158963, referred to as **Sturdy**), and further in view of Nefian (USPN 2004/0002863, referred to as **Nefian**).

Claim 1:

Sturdy teaches a method for network defense (**Sturdy**, ¶ 0013: tactical datalink applications ... used by the military), comprising the steps of:

detecting mission events (**Sturdy**, ¶ 0025: military missions) by processing communications packets and traffic streams (**Sturdy**, ¶ 0013: military communications systems);

forming mission tracks by processing said mission events (**Sturdy**, ¶ 0037: tactical and mission data; **EN**: forming mission tracks is an outcome of processing mission data);

determining active mission types, using said mission events (Sturdy, ¶ 0033: mission computer);

estimating mission sensitivities by processing said mission tracks (**Sturdy**, ¶ 0033: military unique functions);

prioritizing network operations (**Sturdy**, Abstract: message priority management) by processing said mission sensitivities (**Sturdy**, Abstract: improving mission effectiveness); and

correlating network alarms to missions by processing said mission sensitivities (**Sturdy**, ¶ 0081: NETWORK CONFIGURATION AND STATUS functions; **EN**: The status functions compute status values based on correlating network alarms to mission

functions; ¶ 0038: alerts for the pilot), wherein said steps include a database of dynamic and a priori information (**Sturdy**, ¶ 0081: stored data),

wherein estimating mission sensitivities by processing said missiontracks comprises estimating mission sensitivities by processing said missiontracks comprises estimating mission sensitivity to network perturbations (**Sturdy**, ¶ 0098: providing more robustness in message handling; **EN**: 'robustness' defines network perturbations), using mission tracks.

Sturdy does not teach:

determining state of each mission, using said mission events, including producing a mission state vector for each mission;

However, Nefian teaches determining state of each mission, using said mission events, including producing a mission state vector for each mission (**Nefian**, ¶ 0020: state vector describing the state of the hidden nodes). Sturdy and Nefian are from the same field of endeavor, handling data run on a network processor. It would have been obvious to one of ordinary skill in the art to have modified Sturdy's intelligent communications system with state vectors, for the benefit of manipulating and storing state information.

Claim 2:

Sturdy modified by Nafian teaches the method of claim 1 wherein detecting mission events by processing communications packets comprises of:

receiving said communications packets (**Sturdy**, ¶ 0052: messages received from ... network paths);

extracting said communicated information from said communication packets and traffic streams (**Sturdy**, ¶ 0014: collection agents can be used to extract information);

creating homogenous information packages, from said communicated information (**Sturdy**, ¶ 0108: messages created by the onboard military applications);
and

detecting mission events (**Sturdy**, ¶ 0025: military missions) by processing said homogeneous information package (**Sturdy**, ¶ 0109: evaluating message);

Claim 5:

Sturdy modified by Nafian teaches the method of claim 1, wherein prioritizing network operations by processing said mission sensitivities(**Sturdy**, Abstract: improving mission effectiveness) comprises ordering said list of network operations (**Sturdy**, ¶ 0106: list and descriptions) by comparing said mission sensitivities.

Claim 6:

Sturdy modified by Nafian teaches the method of claim 1, wherein said correlating network alarms to missions by processing said mission sensitivities comprising creating a list of relationships between each network alarm (**Sturdy**, ¶ 0038:

alerts for the pilot) and each mission using said mission sensitivity values (**Sturdy**, ¶ 0038: end system status).

Claim 7:

Sturdy modified by Nafian teaches the method of claim 1, wherein network perturbations comprise modifications to network devices, protocols, policies, or architecture through network management courses of actions (**Sturdy**, ¶ 0106: Network management; **EN**: the limitations are implicit within network management).

Claim 8:

Sturdy modified by Nafian teaches the method of claim 1, wherein network perturbations comprise modifications to network devices, protocols, policies, or architecture through attacks on network devices, protocols, policies, or architecture (**Sturdy**, ¶ 0106: Network Management and Message Distribution; **EN**: the limitations are implicit within network management).

Claim 9:

Sturdy teaches the method for network defense, comprising:

Detecting mission events by processing communications packets and traffic streams (**Sturdy**, ¶ 0049: ATN message management);

forming mission tracks by processing said mission events (**Sturdy**, ¶ 0025: military missions);

estimating mission sensitivities by processing said mission tracks (**Sturdy, ¶**
0033: military unique functions);

prioritizing network operations by processing said mission sensitivities (**See**
claim 1, same rejections apply);

and

correlating network alarms to mission by processing said mission sensitivities
See claim 1, same rejections apply),

wherein said steps include a database of dynamic and a priori information,
wherein the step of estimating mission sensitivities by processing said mission
tracks comprises estimating mission sensitivity to network perturbations, using mission
tracks **See claim 1**, same rejections apply),

wherein said database of dynamic and a priori information comprises:

providing a database of performance statistics and observation logs from earlier
missions (**Sturdy, ¶** 0036: performance capability of the available military radios);

providing a set of prespecified mission types (**Sturdy, ¶** 0020: types of data link
messages; **EN**: 'types' of data links or radios define types of mission);

for each mission type, providing a set of prespecified mission states (**Sturdy, ¶**
0036: mission computer; **EN**: the limitations are implicit within a mission computer);

for each mission type, providing a set of prespecified mission events (**Sturdy, ¶**
0036: mission computer; **EN**: the limitations are implicit within a mission computer);

providing a set of prespecified network perturbations (**Sturdy, ¶** 0106: Network
management; **EN**: the limitations are implicit within network management);

Art Unit: 2129

providing a set of weighted mappings from network components to mission states (**Sturdy**, ¶ 0036: mission computer; **EN**: the limitations are implicit within a mission computer);

providing a set of mappings from network perturbations to network components (**Sturdy**, ¶ 0106: Network management; **EN**: the limitations are implicit within network management);

providing a set of prespecified network alarms (**Sturdy**, ¶ 0038: alerts for the pilot);

providing a rule base for updating, adapting, and modifying mission types, mission states, mission events, network perturbations, network alarms, and mappings using said performance statistics and observation logs (**Sturdy**, ¶ 0106: Network management).

Sturdy does not teach:

providing a set of weighted mappings from network components to mission events.

However, Nafian teaches providing a set of weighted mappings (Nafian, ¶ weight associated) from network components to mission events (**Sturdy**, ¶ 0036: mission computer). Sturdy and Nefian are from the same field of endeavor, handling data run on a network processor. It would have been obvious to one of ordinary skill in the art to have modified Sturdy's intelligent communications system with weighted mappings for the benefit of effective correlation between the network and the corresponding mission events.

Claim 10:

Sturdy modified by Nafian teaches the method of claim 2, wherein said communicated information comprises packet source information, destination addresses and port information (**Sturdy**, ¶ 0044: Link-16 mission information).

Claim 11:

Sturdy modified by Nafian teaches the method of claim 2, wherein the step of extracting said communicated information comprises scanning said communicated packets as an unstructured data stream (**Sturdy**, ¶ 0083: scans messages received from various end systems).

Claim 12:

Sturdy modified by Nafian teaches the method of claim 2, wherein the step of extracting said communicated information comprises comparing traffic stream characteristics to known usage patterns (**Sturdy**, ¶ 0083: Analyze data for TRENDS; **EN**: 'Trends' are the usage patterns).

Claim 13:

Sturdy modified by Nefian teaches the method of claim 3, wherein the active mission types are determined through the use of a HMM (**Nefian**, ¶ 0013: hidden Markov model). It would have been obvious to one of ordinary skill in the art to have

modified Sturdy's intelligent communications system with HMM for the benefit of determining hidden mission types from the observable mission types.

Claim 14:

Sturdy modified by Nefian teaches the method of claim 3, wherein the state of each mission is determined through the use of a HMM (**Nefian, ¶ 0013**: hidden Markov model). It would have been obvious to one of ordinary skill in the art to have modified Sturdy's intelligent communications system with HMM for the benefit of determining hidden states from the observable states.

Claim 15, 16:

Sturdy modified by Nefian teaches the method of claim 13, wherein mission HMM component determination comprises combining performance statistics from earlier missions with an Operational Sequence Diagram (**Nefian, ¶ 0019**: HMM with a sequence of states). It would have been obvious to one of ordinary skill in the art to have modified Sturdy's intelligent communications system with the combination performance of HMM with a sequence of states, for the benefit of achieving continuous observable states.

Claim 17:

Sturdy modified by Nefian teaches the method of claim 3, wherein the step of determining said active mission types is performed inductively (**Sturdy**, ¶ 0082: request is active ... to evaluate routing criteria; **EN**: To evaluate the routing criteria, the active requests would support the routing function without directly ensuring it, which is what inductive reasoning it).

Claim 18:

Sturdy modified by Nefian teaches the method of claim 17, wherein the step of determining said active mission types inductively, is through the use of a forward algorithm (**Sturdy**, ¶ 0082; **EN**: The induction discussed in claim 17 is a forward algorithm because its flow is from request to routing).

Claim 20:

Sturdy modified by Nafian teaches the method of claim 1, wherein said estimating mission sensitivity to network perturbations comprises using a closed-form expression to compute mission sensitivities (**Sturdy**, ¶ 0036: computes the Actual Communication Performance (ACP) indicator; **EN**: The ACP is an explicit computation and hence a closed form).

Claim 23:

Sturdy modified by Nafian teaches the method of claim 20, wherein said set of network perturbations comprises a set of alternative network operation COAs (**Sturdy**, ¶ 0106: Network management; **EN**: the limitations are implicit).

Claim 24:

Sturdy modified by Nafian teaches the method of claim 20, wherein said set of network perturbations comprises a set of attacks on network devices, protocols, policies, and architecture (**Sturdy**, ¶ 0106: Network management; **EN**: the limitations are implicit).

Response to Arguments

7. Applicant's arguments filed Feb 01, 2008 have been fully considered but they are not persuasive.

8. Applicant's argument regarding claim 1 on pages 7-8:

Sturdy network fails to teach the network recited in amended independent claim 1 in that the network of amended independent claim 1 recites "determining active mission types" and "determining state of each mission."

Examiner's response:

Sturdy teaches military missions (Sturdy, ¶ 0025) and collecting status and faults (Sturdy, ¶ 0037). The 'status' determines the state of a mission. Therefore, all limitations are met.

Art Unit: 2129

9. Applicant's argument regarding claim 1 on pages 8:

Sturdy fails to teach "estimating mission sensitivity to network perturbations, using mission tracks."

Examiner's response:

Sturdy teaches estimating mission effectiveness and network management, specifically for military communication systems (Sturdy, Abstract and also ¶ 0022). Also, Sturdy discusses robustness in message handling (Sturdy, ¶ 0098). To provide 'robustness', a system would be managing network perturbations effectively.

10. Regarding applicant's argument on page 9:

One of ordinary skill in the art would not equate 'determining the status of available military radios and determining active mission types and the state of the missions.'

Examiner's response:

The status of radios in the military context is based on message routing criteria such as, priority, security, urgency, message size etc. (Sturdy, ¶ 0011). The same factors determine the state of the missions.

11. Regarding applicant's argument on page 9:

The combination of references Sturdy and Nefian that anticipates HMM is not appropriate.

Examiner's response:

The rationale underlying the combination is that a simple substitution of 'a hidden Markov Model' or HMM as taught by Nefian into the network model for military missions, as disclosed by Sturdy's invention, yields the applicant's limitation regarding the use of HMM for determining mission types.

Examination Considerations

12. Examiner has cited particular columns and line numbers or paragraph numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the Applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner. The entire reference is considered to provide disclosure relating to the claimed invention.

Conclusion

13. Claims 1-2 and 5-18 and 20, 23-24 stand rejected. Claims 19, 21 and 22 are objected.

Art Unit: 2129

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KALPANA BHARADWAJ whose telephone number is (571)270-1641. The examiner can normally be reached on Monday-Friday 7:30am 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Vincent can be reached on (571) 272-3080. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2129

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bharadwaj Kalpana/
Examiner, Art Unit 2129

/David R Vincent/
Supervisory Patent Examiner, Art Unit 2129